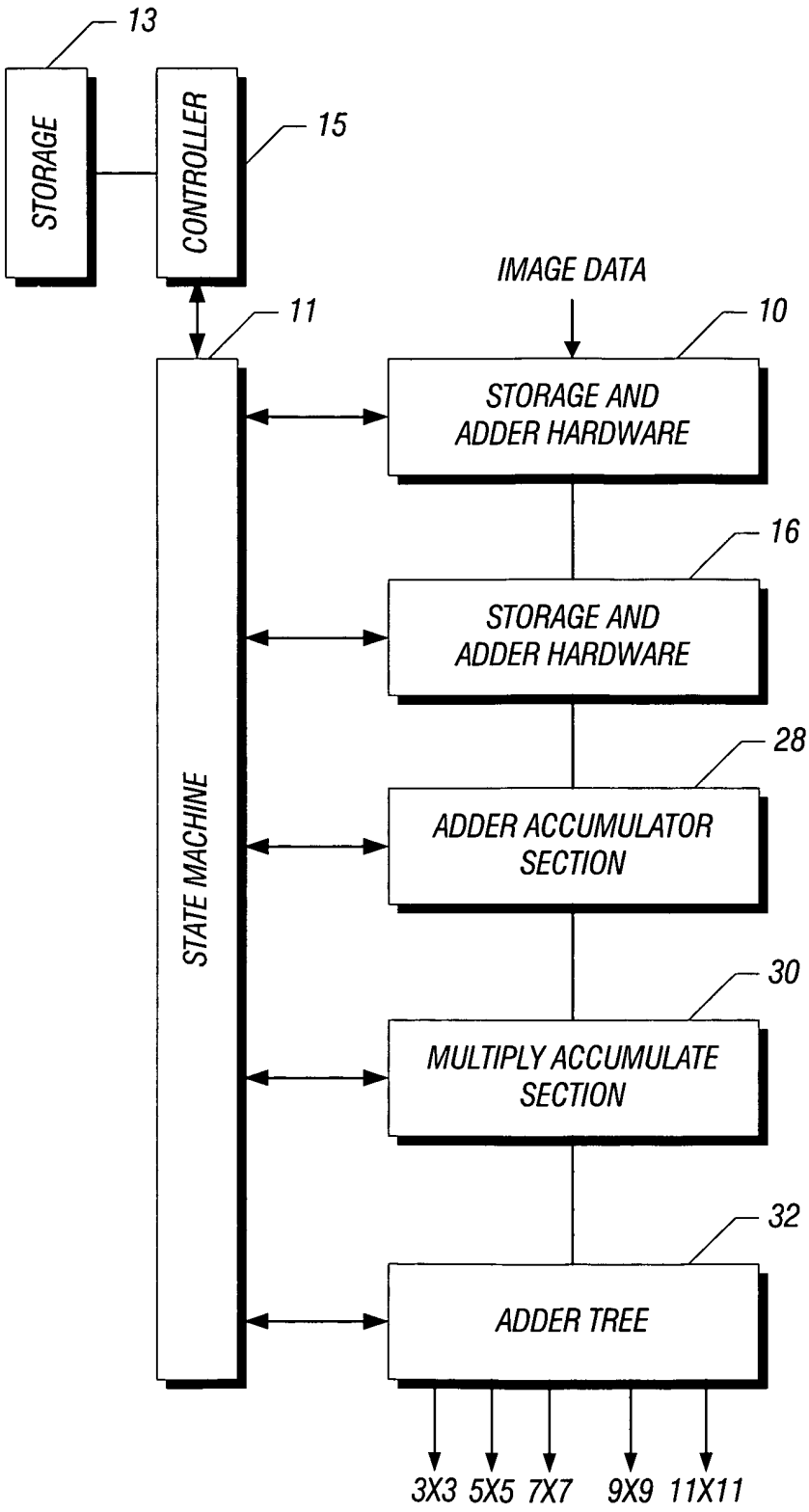
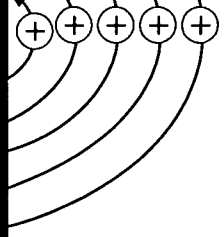

13
STORAGE
CONTROLLER
15
IMAGE DATA
11
10
STORAGE AND ADDER HARDWARE
16
STORAGE AND ADDER HARDWARE
28
ADDER ACCUMULATOR SECTION
30
MULTIPLY ACCUMULATE SECTION
32
ADDER TREE
STATE MACHINE
3X3 5X5 7X7 9X9 11X11

FIG. 1

	C11	C10	C9	C8	C7	C6	C5	C4	C3	C2	C1
R1	1	2	3	4	5	6	5	4	3	2	1
R2	2	3	4	5	6	7	6	5	4	3	2
R3	3	4	5	6	7	8	7	6	5	4	3
R4	4	5	6	7	8	9	8	7	6	5	4
R5	5	6	7	8	9	10	9	8	7	6	5
R6	6	7	8	9	10	11	10	9	8	7	6
R7	5	6	7	8	9	10	9	8	7	6	5
R8	4	5	6	7	8	9	8	7	6	5	4
R9	3	4	5	6	7	8	7	6	5	4	3
R10	2	3	4	5	6	7	6	5	4	3	2
R11	1	2	3	4	5	6	5	4	3	2	1



10

FIG. 2

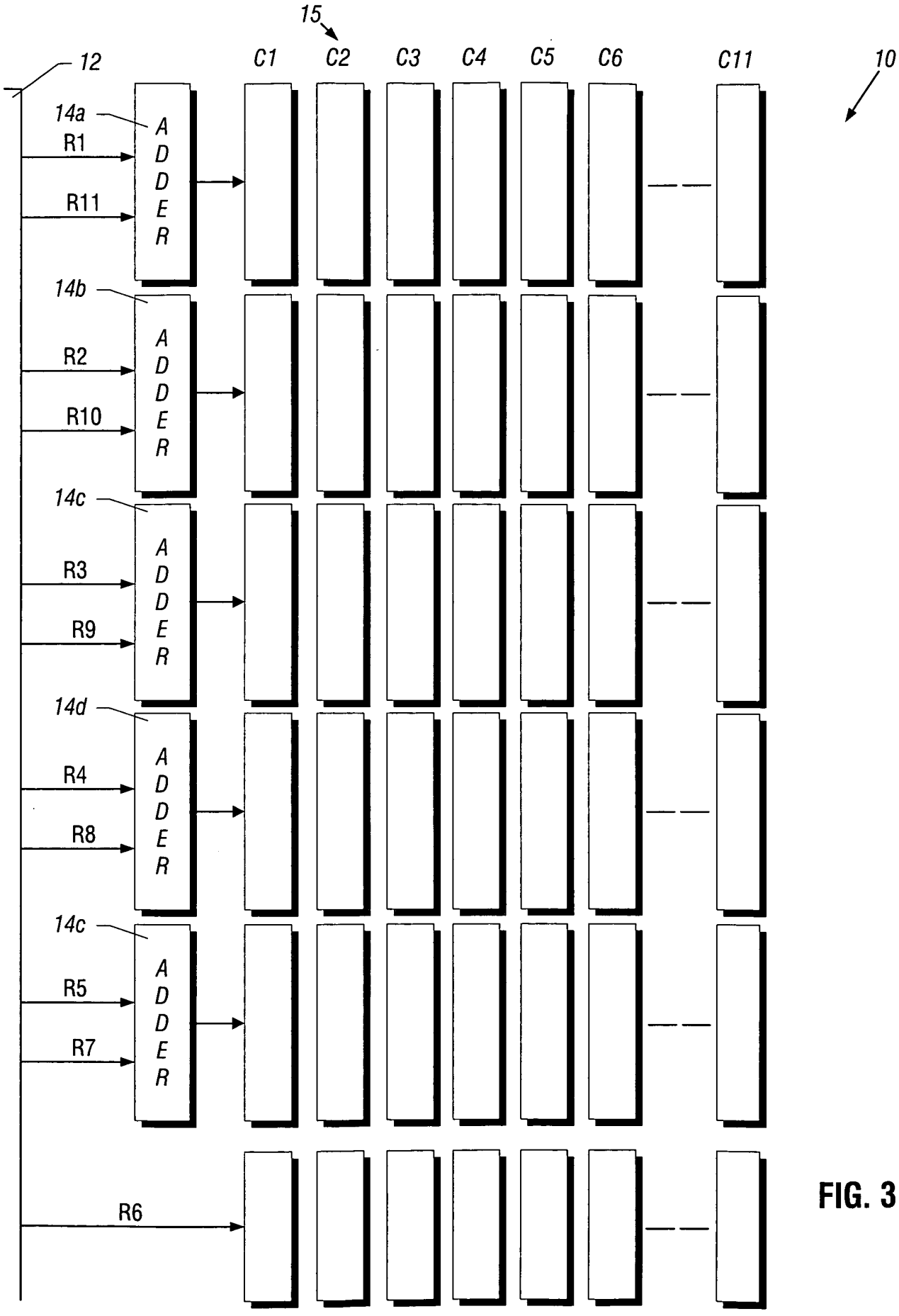
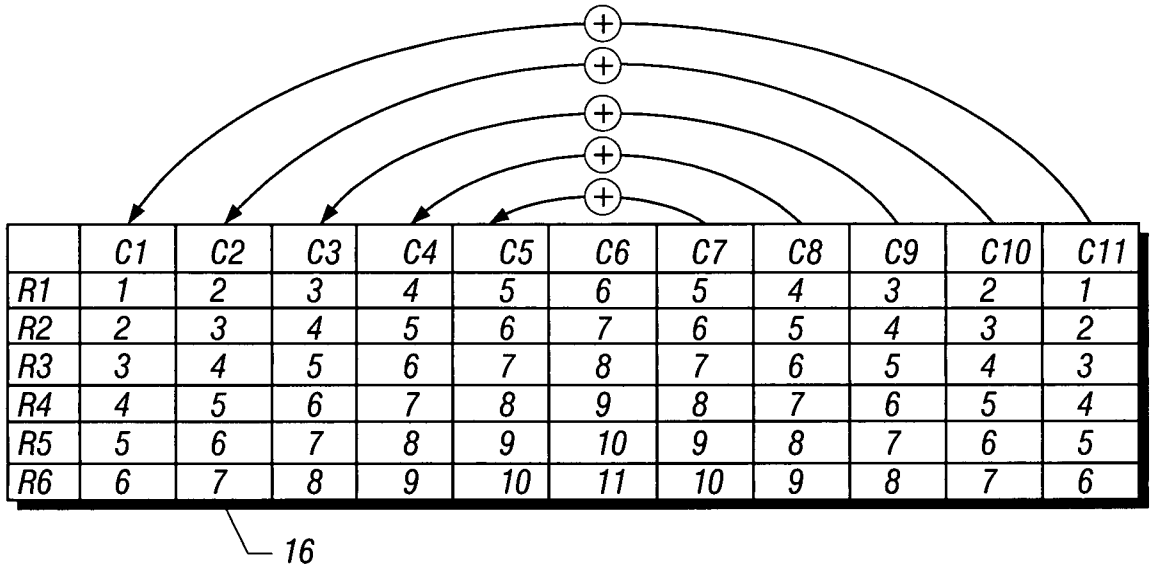

15
12
C1
C2
C3
C4
C5
C6
C11
10
14a
ADDER
R1
R11
14b
ADDER
R2
R10
14c
ADDER
R3
R9
14d
ADDER
R4
R8
14c
ADDER
R5
R7
R6

FIG. 3

TOKEN: 23F2B6B



	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
R1	1	2	3	4	5	6	5	4	3	2	1
R2	2	3	4	5	6	7	6	5	4	3	2
R3	3	4	5	6	7	8	7	6	5	4	3
R4	4	5	6	7	8	9	8	7	6	5	4
R5	5	6	7	8	9	10	9	8	7	6	5
R6	6	7	8	9	10	11	10	9	8	7	6

16

FIG. 4

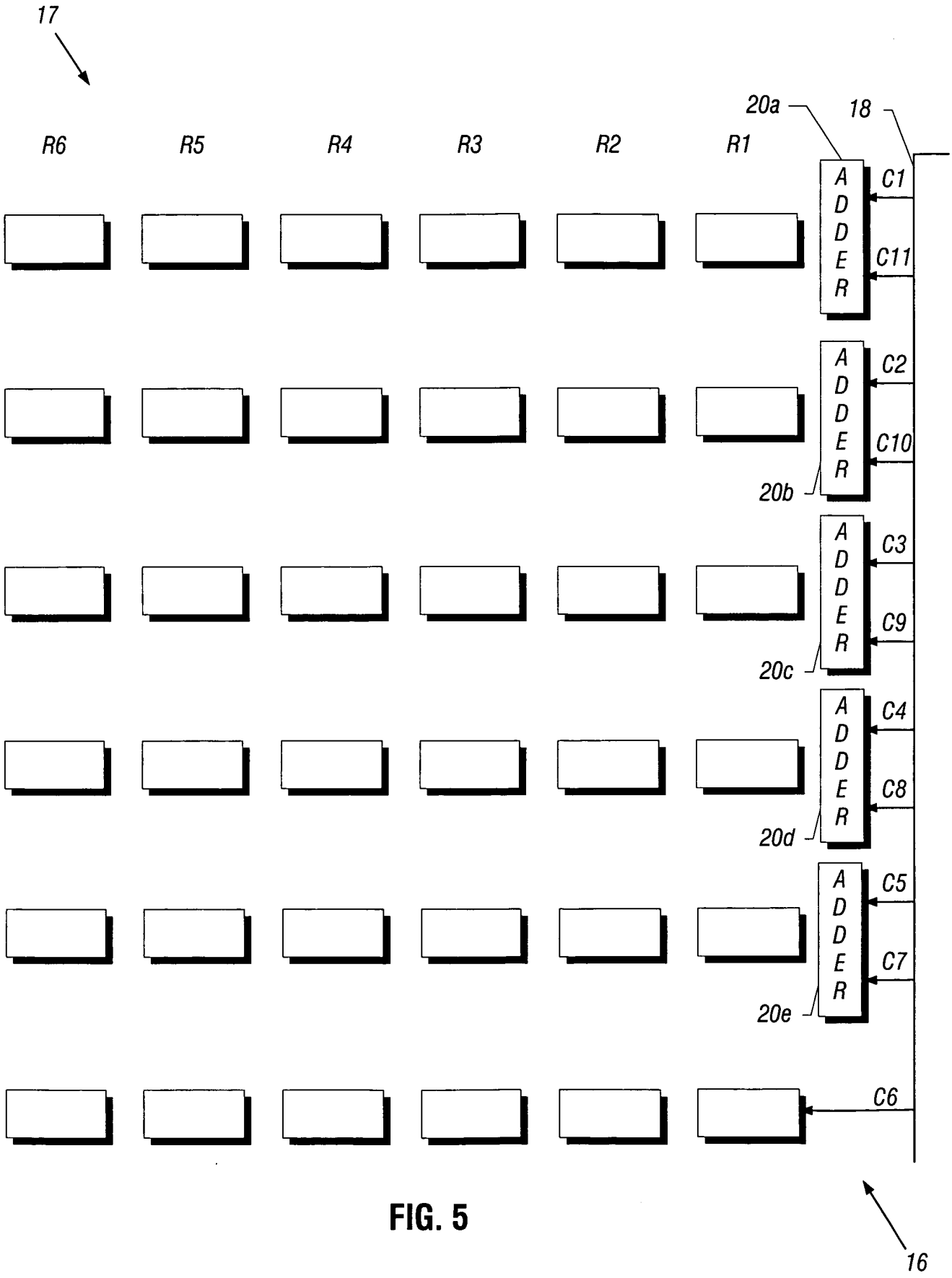

17
R6
R5
R4
R3
R2
R1
20a
18
ADDER
C1
C11
20b
C2
C10
20c
C3
C9
20d
C4
C8
20e
C5
C7
C6
16

FIG. 5

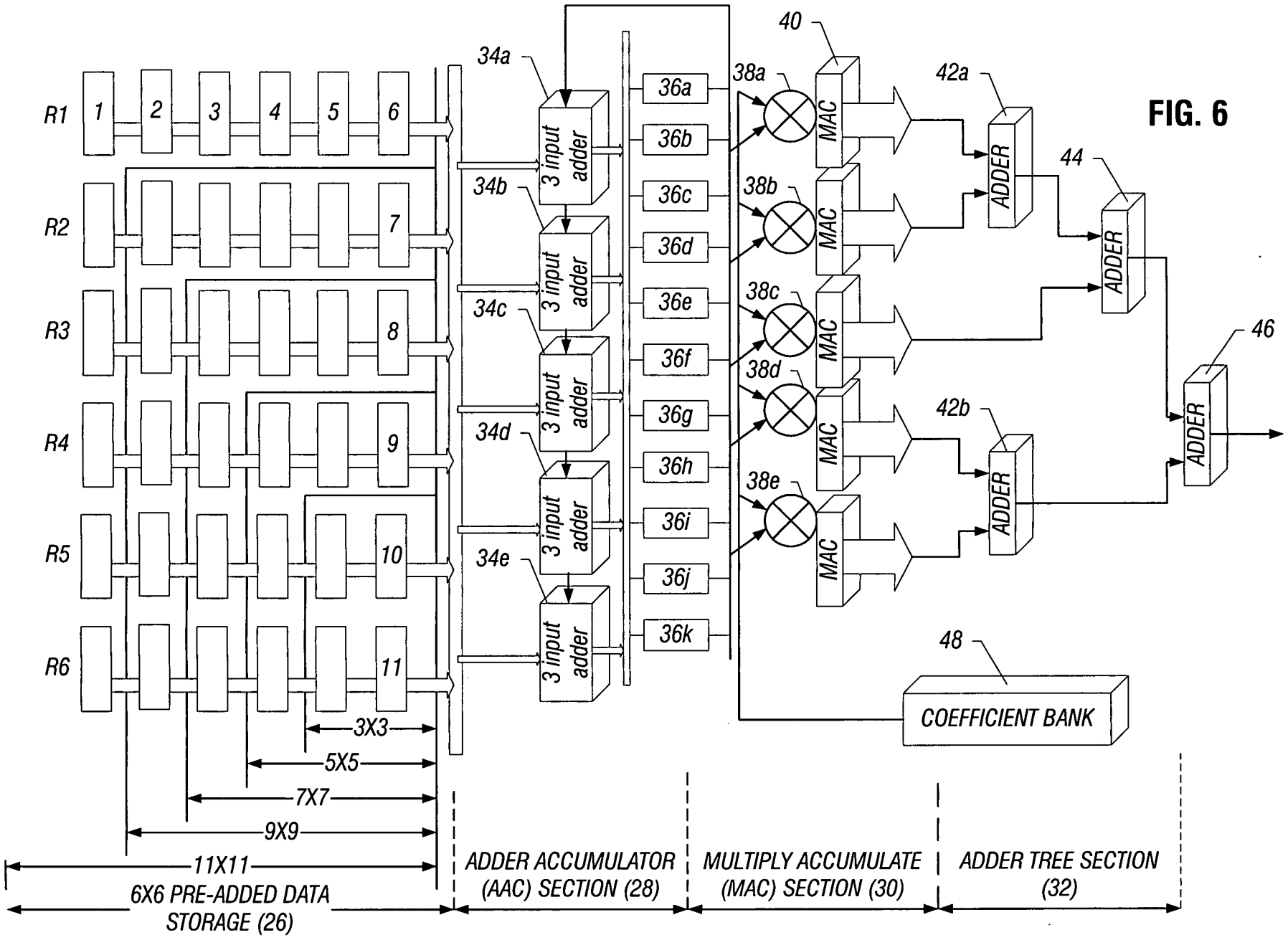

R1
R2
R3
R4
R5
R6
1
2
3
4
5
6
7
8
9
10
11
3X3
5X5
7X7
9X9
11X11
6X6 PRE-ADDED DATA STORAGE (26)
34a
34b
34c
34d
34e
3 input adder
36a
36b
36c
36d
36e
36f
36g
36h
36i
36j
36k
ADDER ACCUMULATOR (AAC) SECTION (28)
38a
38b
38c
38d
38e
MAC
40
MULTIPLY ACCUMULATE (MAC) SECTION (30)
42a
42b
ADDER
44
46
ADDER TREE SECTION (32)
48
COEFFICIENT BANK

FIG. 6

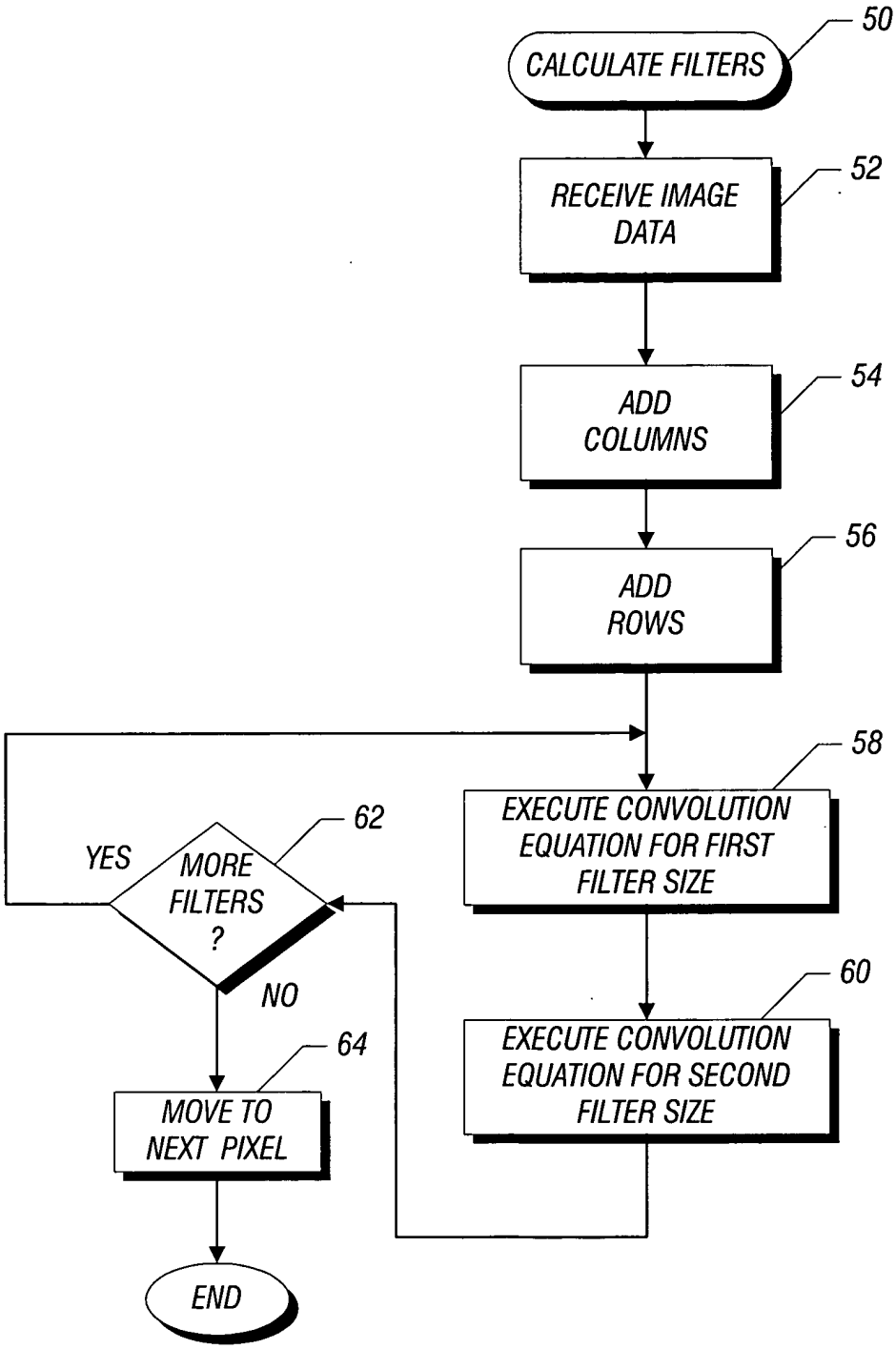

CALCULATE FILTERS
50
RECEIVE IMAGE DATA
52
ADD COLUMNS
54
ADD ROWS
56
EXECUTE CONVOLUTION EQUATION FOR FIRST FILTER SIZE
58
EXECUTE CONVOLUTION EQUATION FOR SECOND FILTER SIZE
60
MORE FILTERS ?
62
YES
NO
MOVE TO NEXT PIXEL
64
END

FIG. 7